REMARKS

Claims 1-22 and 26-30 are pending and stand rejected.

Applicants have reviewed the Office action, including the Examiner's remarks and the references cited therein. Applicants submit that the following remarks are fully responsive to the Office action, and that all pending claims are patentable over the cited references.

Rejections Under 35 U.S.C. § 103

Claims 1-6, 14-18, 21, 22, 26, 27, 29, and 30

The Examiner rejects claims 1-6, 14-18, 21, 22, 26, 27, 29, and 30 under 35 U.S.C. § 103 as obvious over United States patent no. 6,370,476 to McBride ("McBride") in view of United States patent no. 5,647,058 to Agrawal et al. ("Agrawal"). To establish a prima facie case of obviousness, the Examiner must demonstrate some suggestion or motivation to combine one or more references, with a reasonable expectation of success, to teach or suggest each and every claimed limitation. MPEP § 2142. Applicants contend that the Examiner has failed to meet this burden with respect to the rejected claims. In particular, Applicants contend that, though the cited references use the term "index," the term is used in a markedly different sense than in the present application, and thus the asserted combination does not teach or suggest each and every element of the claimed invention.

Claims 1 and 26 recite "computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity[.]" It is well settled that patentees can be their own lexicographers. MPEP § 2111.01(IV). Applicants have done precisely that with the term "one-dimensional grid index series." Briefly, a "one-dimensional grid index series" expresses, as a one-dimensional entity (e.g., a vector rather than a matrix), the indices assigned to the grid squares to which the coordinates for a particular location entity map for each of several grids of varying size overlaid upon a map space. That is, for a location entity *x* in space, there is a function *Index(x)* that retrieves a unique integer value identifying the

grid square that contains location entity *x*. Where multiple grids (for example, multiple grids of varying size) are used, a function *Index(x, s)* retrieves a unique integer value for the grid square within a grid *s* that contains location entity *x*. Specification, para. [0043].[1]

The computation of a "one-dimensional grid index series" according to an embodiment of the present invention is explained in greater detail in the specification. Initially, a map space, such as the region of the globe shown in Fig. 4a, is overlaid (or "gridded") with multiple grids of varying size, as shown in Fig. 4b. Next, the grids are indexed—assigned unique integer identifiers—in raster-scan order, such that every grid square applied to the map space can be identified by two values: grid size (*s*) and grid index. Specification, paras. [0054]-[0055].

A given location entity *x* has coordinates, such as a latitude and longitude pair, associated therewith. Depending upon the precision with which the coordinates were measured, there may be greater or lesser measurement error associated therewith. Assuming that the measurement error is such that the true location of *x* is normally distributed about the measured coordinates with a standard deviation σ, it is possible to determine an area within which the location entity *x* is located with 99.8% certainty by creating a range that extends three standard deviations (3σ) to either side of the coordinates associated with the location entity *x* (e.g., $\mu \pm 3\sigma$). The "degree-scale of precision, *r*" is the smallest size grid square capable of fully encompassing the area so calculated. For grids having grid squares of size $s \geq r$, it is determined to which grid square (e.g., which grid index) the location entity *x* maps. For grids having grid squares of size $s < r$, a null value is assigned. Id., para. [0055]. The result is a plurality of grid indices—assigned integer identifiers for grid squares or null values—where the location entity *x* is located for grids of varying size. The "one-dimensional grid index series" for location entity *x* is the string of these indices. Id., para. [0063] and Fig. 6.

As a simple example of a "one-dimensional grid index series" according to the present invention, one can consider a checkerboard. Out of the box, a checkerboard is

[1] Paragraph references refer to United States patent application publication no. 2004/0225665, published November 11, 2004.

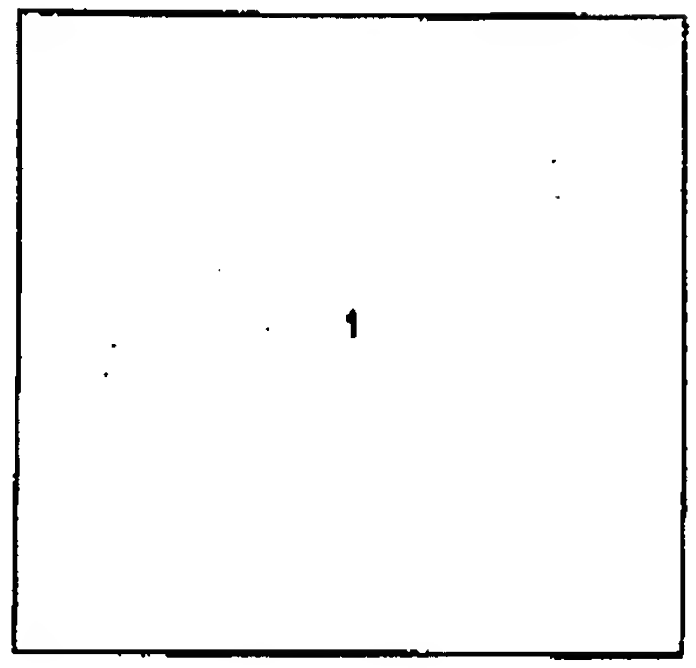
gridded with a grid of size $s = 1$ into an 8-by-8 grid. Indexed in raster-scan order, this grid looks as follows:

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64

By combining squares on the board, however, the same checkerboard can also be gridded with a grid of size $s = 2$ into a 4-by-4 grid, a grid of size $s = 4$ into a 2-by-2 grid, and a grid of size $s = 8$ into a 1-by-1 grid (e.g., the entire board):

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

1	2
3	4



Next, consider a given location entity *x*. Suppose that the standard deviation of the measurement of location entity *x* is such that the area within which one can be 99.8% certain *x* is actually located is small enough to fit entirely within a grid square of size *s* = *1* (that is, the precision of the coordinates for location entity *x* is such that it can be identified to the nearest single square on the checkerboard). Suppose further that the coordinates for location entity *x* map to the grid square having grid index 34 in the grid of size *s* = *1* (that is, Index(*x*, *1*) = 34). It follows that location entity *x* will map to the grid square having grid index 9 in the grid of size *s* = *2* (e.g., Index(*x*, *2*) = 9), the grid square having grid index 3 in the grid of size *s* = *4* (e.g., Index(*x*, *4*) = 3), and the grid square having grid index 1 in the grid of size *s* = *8* (e.g., Index (*x*, *8*) = 1). The "one-dimensional grid index series" for location entity *x* may therefore be expressed as [1, 3, 9, 34]—a "series of grids that incorporate the location of each location entity[.]"

McBride does not teach or suggest the claimed "one-dimensional grid index series" as explained above. McBride teaches that one may perform a survey, thereby generating a number of "survey location coordinates" measured in a first coordinate system C1. McBride, col. 3, lines 23-46. The survey location coordinates are then used to impose a grid upon the survey region. Id., col. 3, lines 57-60 and Fig. 3. Unlike the claimed invention, this grid need not be regularized and exists only in the context of the visited survey location coordinates—without the survey location coordinates, the survey region remains ungridded.

A survey according to McBride preferably also includes N "survey control points," which are points that have known coordinates both in coordinate system C1 and a

second coordinate system C2. Using the "survey control points" as "anchors," it is possible to generate a transform function that expresses locations measured in coordinate system C1 in coordinate system C2. That is, the transform function registers coordinate system C1 to coordinate system C2. Id., col. 3, lines 47-56. McBride utilizes a "grid point index" to identify grid points during calculation of the transform function.

As should be clear from the foregoing discussion, McBride's "grid point index" in no way teaches or suggests the claimed "one-dimensional grid index series." Though a similar term has been used, McBride's "grid point index" is clearly different from the claimed "grid index series." The *only* commonality appears to be the use of the term "index" to connote a unique integer identifier for something, but this "something" differs markedly between the claimed invention and McBride. For example, whereas the claimed "grid index series" identifies the *grid squares* to which a location entity is *mapped* for grids of *varying size*, McBride's "grid point index" identifies the *single point* to which a location entity *directly corresponds* on a *single grid*.

Agrawal does nothing to cure the shortcomings of McBride discussed at length above. Accordingly, Applicants submit that the asserted combination of references fails to teach or suggest each and every element of claims 1 and 26, and that the Examiner has consequently failed to establish a *prima facie* case of obviousness as to claims 1 and 26. The remaining dependent claims are allowable for at least the same reasons as the independent claims from which they depend are allowable.

In light of the foregoing, Applicants respectfully request that the Examiner reconsider and withdrawal the section 103 rejection of claims 1-6, 14-18, 21, 22, 26, 27, 29, and 30.

Claims 7, 8, and 28

The Examiner rejects claims 7, 8, and 28 under 35 U.S.C. § 103 as obvious over McBride in view of Agrawal and in further view of United States patent no. 6,603,885 to Enomoto ("Enomoto"). Applicants respectfully disagree.

Claims 7 and 8 depend from claim 1, while claim 28 depends from claim 26. The addition of Enomoto does nothing to cure the shortcomings of the combination of

McBride and Agrawal with respect to claims 1 and 26, discussed at length above. Applicants therefore submit that the rejection of claims 7, 8, and 28 is improper for at least the reasons discussed above, and should accordingly be withdrawn.

Claims 9-13

The Examiner rejects claims 9-13 under 35 U.S.C. § 103 as obvious over McBride in view of Agrawal, Enomoto, and United States patent no. 6,333,924 to Porcelli et al. ("Porcelli"). Applicants respectfully disagree.

Claims 9-13 depend from claim 7. The addition of Porcelli does not overcome the shortcomings of the combination of McBride, Agrawal, and Enomoto with respect to claim 7, discussed at length above. Applicants therefore submit that the rejection of claims 9-13 is improper for at least the reasons discussed above. Applicants further respectfully point out that, contrary to the Examiner's assertion, Porcelli does not teach or suggest the equations recited in claims 10 and 11. The rejection of claims 9-13 under section 103 is clearly improper and should be withdrawn.

Claims 19 and 20

The Examiner rejects claims 19 and 20 under 35 U.S.C. § 103 as obvious over McBride in view of Agrawal, Enomoto, and European Patent application EP 838 764 A2 to Na ("Na"). Applicants respectfully disagree.

Claims 19 and 20 depend from claim 1. The addition of Na does not address the shortcomings of McBride and Agrawal with respect to claim 1, discussed at length above. Further, Applicants disagree that Na teaches the equations recited in claims 19 and 20. Therefore, the rejection of claims 19 and 20 under 35 U.S.C. § 103 is improper and should be withdrawn.

Application No. 10/673,111
Office action dated October 6, 2006
Response dated April 6, 2007

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CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance, and request that all rejections be withdrawn, that all pending claims be allowed, and that the application be passed to issue. If, for any reason, the Examiner finds the application to be in other than condition for allowance, the Examiner is invited to contact the undersigned in an effort to resolve any matter still outstanding before issuing another action.

Applicants have provided for a three month extension of time and a Notice of Appeal herewith. Authorization is hereby granted to charge any fees due with the filing of these documents to Deposit Account No. 50-1129 with reference to Attorney Docket No. 81190-0007.

Respectfully submitted,

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Date: April 6, 2007

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